

earth's magnetism, according to the method described by Mr. Andrew Gray (*NATURE*, vol. xxvii. p. 32), might not be without interest to some readers, as showing the amount of accuracy which can be obtained. The experiments were made by one of my students at this College about four months ago.

The form of reflecting galvanometer which lends itself best to these experiments is one devised by Prof. Stuart, in which the needle is centrally situated between two rectangular pieces of wood carrying the coils. To the sides of these, two boards can be easily attached by brackets, so as to be in the same plane as the needle, and quite horizontal, and in this position do not interfere with the light falling upon or reflected from the mirror. The reflecting magnet is then north or south of the needle, and perpendicular to it.

The magnets were made from thin knitting needles (about No. 19, B.W.G.), cut to the proper length, and made glass hard. They were made in two lengths, 8.5 and 12.5 cm., but the longer ones were slightly warped in hardening, and did not give concordant results. The scale was at a uniform distance of 62.5 cm. from the mirror, and in reading the deflections four observations were made and again repeated after noting the times of oscillation, as described by Mr. Gray. Each of the deflections given below is therefore the mean of eight observations.

The following are the details of the experiments :—

Denomination of magnet.	A.	B.	C.
Length	8.5 cm.	8.5 cm.	8.5 cm.
Weight	0.6760 grm.	0.6924 grm.	0.6900 grm.
Time of oscillation..	4.88 sec.	4.71 sec.	4.76 sec.
Deflection at 15 cm.	7.1 cm.	7.7 cm.	7.6 cm.
„ 13 „ 10.6 cm.	11.5 cm.	11.2 cm.	

From these results we obtain, by aid of the formula :—

$$H = \sqrt{\frac{4}{3} \frac{\pi^2 l^2 w}{(r^2 + l^2)^{\frac{3}{2}} T^2 \tan \theta}},$$

the following values for H :—

0.17705
0.17635
0.17828
0.17754
0.17725
0.17770

$$\text{Mean} = 0.17736 \pm 0.00048,$$

showing an amount of accuracy which may, I think, be compared with that obtained with much more expensive and delicate apparatus.

T. S. HUMPIDGE

University College of Wales, Aberystwyth, June 27

The Lachine Aërolite

THE most remarkable fall of an aërolite that has yet been recorded took place at Lachine, about eight miles from Montreal, on Saturday, July 7, 1883. I give the following account from the *Montreal Daily Star* of July 11 :—

"The fall of the aërolite transpired during a rain shower on the forenoon of Saturday, and there were no premonitory indications to show that the air was more than usually charged with electricity. The person who witnessed the fall of the aërolite more clearly than any one else was Mrs. Popham, wife of Mr. John Popham, insurance agent. Mrs. Popham was seated in her house up stairs sewing, when all of a sudden the apartment became illuminated with a blinding flash of light. The lady instantly glanced out of the window, when to her astonishment she beheld a huge mass of fire descending towards the earth in a diagonal direction. This brilliant body had a solid nucleus that appeared to the eye about four feet square, and a strange, indescribable noise was caused by its flight through the air. Simultaneously, as it seemed to Mrs. Popham, she received a paralysing shock that affected her from head to foot, as if the entire contents of a highly-charged battery had been discharged into her body at once. The astonishing brilliancy of the meteor caused a temporary loss of sight, and it was fully half an hour before the lady could distinguish surrounding objects. When Mrs. Popham first beheld the falling mass she fancied that it was about to strike the house, and is still of the opinion that it must have passed alarmingly close. The lady took several hours to recover from the shock, and when Mr. Popham returned home

several hours after he found her partially prostrated from its effects.

"Mr. McNaughton, a brother of Mrs. Popham, was sitting down stairs reading when the flash came. He jumped up, and, looking out of the window under the trees towards the river, he plainly saw the fiery ball strike the water at a little distance from the shore, causing a mountainous upheaval and sending splashes in every direction.

"Mr. Horace Baby also saw the glare caused by the flight of the meteor, although he did not actually see the body itself. He said that he felt a tremendous shock, and that he could feel the electricity oozing out of his finger-ends for some time after.

"Mr. C. P. Davidson, Q.C., was sitting down to lunch at the time, and describes the crash as being tremendous. The Rawlings family also felt the shock severely, as indeed did half the village. Mr. Popham's cottage stands about seventy feet from the water's edge at Stony Point, and it is thought that the aërolite fell into the stream about twenty or thirty yards from the shore, in about twenty feet of water. Owing to the high winds since the occurrence the water has been so muddy that it has been impossible to locate the whereabouts of the meteor. An attempt, however, will shortly be made to bring it to the surface."

I will send further details when they come to hand.

E. W. CLAYPOLE

New Bloomfield, Perry Co., Pennsylvania, July 15

Cold and Sunspots

YOUR correspondent, Mr. C. J. B. Williams, is wrong in the statement he makes in *NATURE*, vol. xxviii. p. 103, concerning the cold in California in the month of March. The month was the warmest March we have had for some years, the mean temperature being 3.5 above the average, and 2.8 above the average for the whole of the Pacific coast. February, on the contrary, was a very cold month, the mean temperature being 3.6 below the average. I believe it will be found that the mean temperature of a hemisphere is not affected by sunspots. That the seasons, however, are influenced by the state of the sun's surface I have no doubt, but this only in a secondary manner. In a paper read before the California Academy of Sciences in 1870 (see *Proceedings*, vol. iv. p. 128), I pointed out that our extreme seasonal climates were caused by the prevalence of broad belts of north and south winds which would extend continuously from east to west for 1500 or 2000 miles, and would blow over the same surface for months together, causing extreme seasons with temperatures above the average where the south current prevailed, and cold winters where there was a northerly current.

As a general rule when there is a cold winter on the Pacific coast the winter in the Eastern States is mild. The following figures taken from the U.S. Meteorological Reports will illustrate what I mean :—

Mean Temperature for February 1883

Below the Average		Above the Average	
North Pacific States ...	-4.3	North Atlantic States	+2.2
Middle Pacific region	-4.3	Middle Atlantic States	+4.3
South Pacific region ...	-2.1	Florida	+6.3

Thus while on the whole of the Pacific coast the temperature of the whole was from 4.3 to 2.1 below the average, on the Atlantic coast the temperature was from 6.3 to 2.2 above the average.

Towards the end of February the north current that had been prevailing over the western regions of the continent during the whole of the winter shifted to the east, and this change of longitude was accompanied by some of the worst cyclones that have visited the central and middle States for years.

During the month of March, whilst we were under the régime of a south current, the temperature in the Eastern States was low, the temperature in Massachusetts for March being 7.3 below the average.

My own belief is that the connection between the character of our seasons and sunspots will have to be worked out through the influence of the sun on the regional distribution of air currents.

San Francisco, Cal., July 3

JAMES BLAKE

Intelligence in Animals—Can a Viper Commit Suicide?

HAVING occasionally caught a viper, and kept it for a time in a glass case, one of the platelayers called me last Thursday and said "there was a fine 'Long Cripple' (a local name for a

serpent of any kind) lying on the bank a few yards down the line." I went to the place indicated, and there was a very large viper basking in the sun, but when I got near, it began to move away, and to prevent its escape I gently pressed a stick across it while I sent the man to fetch a glass jar to secure it in; but when it found its progress arrested, it began in a very spiteful manner to dart its nose forward, striking at the stick and stones and anything that was within its reach, but I could not see that it opened its mouth to make a real bite; but when it found with all its wriggling and twisting it was unable to free itself, it turned its head round upon itself, and about four inches from the head it opened its jaws and gave itself a bite, and when the fangs were well into the skin, it gave an extra squeeze, as if it intended to make sure that the operation should be thoroughly and effectively performed. It then deliberately withdrew its fangs, and in so doing it turned its head first one way and then the other, so as to withdraw one fang at a time.

Its head then went forward, and its body and tail became straight, and there lay the viper apparently lifeless, but I noticed a slight tremor in the skin and scales, which gradually passed from the head to the end of the tail. I took it up with my hand and placed it in the glass jar, and stood the jar in the window where the rays of the sun were hot, and in twenty five minutes the viper began to show signs of life, and in an hour it was as lively as if nothing had happened.

I should be glad to know whether it has come to the knowledge of any of the readers of NATURE that any human being or any animal has died from the bite of a viper. In my boyhood I have known sheep being bitten in the under jaw near the lip, and the animal's head has swollen very large, but invariably the sheep were well again when seen early on the following morning.

Some twenty years ago I saw a man who had been bitten in the hand by a viper, and his arm swelled and turned purple in places, and he was sick and faint for some hours, but he told me he was as well twenty-four hours after the bite as he was before.

R. LANGDON

Silverton Station, Cullumpton, Devon, July 28

A Cat and a Chicken

THE account I extract below was given in a local paper dated May 30 last:—

"*Strange Attachment.*—A curious instance of the above was brought to our knowledge by Mr. Hibbs, of the 'White House,' Swanage. A hen sitting on thirteen eggs hatched out twelve chickens on the 15th inst., but during her sitting four stray eggs had been laid in her nest, and as the eggs had not been marked these could not be removed. The hen with her little brood were not taken from the nest till two days later, when one of the stray eggs was found to be just bursting its shell. Mrs. Hibbs, in trying to assist the little stranger by removing the shell, somewhat injured it, and thinking it would die, and not liking to kill it herself, she thought that her cat (which happened to have a kitten a few days' old) would make short work of it. Strange to say the cat commenced to remove all the shell from the hatching chick, and then to shelter it with her kitten; since which she has carefully looked after it, and it is certainly a pleasing and unusual sight to see the little chick nestling between the forepaws of its foster mother with the kitten in close proximity. Mr. Hibbs tried to put the chicken with the rest of the brood, but the cat was so uneasy until the chicken was restored to her, that Mr. Hibbs has decided to let her have her own way, and bring them up together."

I kept the paper by me, intending, if I could verify the incident, to send the report of it to you. But under pressure of other writing it was not till a week ago that I addressed a letter to Mr. Hibbs. Last night I received from Mr. James Andrews of Swanage the following reply:—

"Faircross, Wyke Regis, Weymouth, July 24, 1883

"DEAR SIR,—David Hibbs of Swanage has forwarded me your letter of the 19th inst., asking me to reply to it. This he has done, I presume, as I had put his paragraph to the paper a little into 'shipshape' for him

"I am a resident at Swanage, and the bank manager there, and can vouch for the details of the 'Strange Attachment' just as recorded. I went round at Hibbs's request when the chicken was four days old. The old cat was lying down—the kitten asleep—and the little chick nestling with the cat, who would lift up her foreleg whenever the chick came near, to allow the chick

to nestle under its arm, when it would close its arm around it in a most amusing and affectionate way, and seemed to be much more anxious about it than her own kitten. They began feeding the little chick at the first by sprinkling sop on the hair of the cat, which the chick would pick off. I do not know whether Hibbs has replied to you as well, as he did not say, but I hope the above will be sufficient.—JAMES ANDREWS."

It is to be noted that these aberrations from inherited habit—to which we have given the convenient name of instinct—occur almost invariably under the strong solvent of the maternal sympathy; but that they should occur at all points strongly towards the essential oneness and common origin of all life—however widely it may have deviated later along its ancestral lines of descent.

HENRY CECIL

Bregner, Bournemouth, July 25

Primæval Man and Working-Men Students

I RECEIVED a letter with great pleasure a fortnight ago from four new correspondents, who said they were working-men of Plaistow who had read my notes on Primæval Man in NATURE, had studied the Pitt-Rivers collection, and wished to show me their finds in Essex and have the North-East London position personally explained to them. Sunday having been mentioned as a convenient day, and this being approved by me, my correspondents (Messrs. W. H. Smith, Amos Herring, W. Swain, and Philip Thornhill) came here on Sunday morning, July 29. The stones brought were of great interest, mostly belonging to the Essex positions published by me. One example was a superb, rather large, wedge-shaped, pointed, slightly abraded, and ochreous implement found at Leyton; two were from Plaistow, a locality almost unrepresented in collections; one from West Ham, and other pieces from Wanstead. A somewhat small ovate specimen of great interest was found by one of my correspondents in the gravel excavated for the New Albert Dock, the extension of the Victoria Dock. The object of the greatest interest was a rude scraper-like tool made from a somewhat large piece of tabular flint, and found in gravel excavated between Loughton Railway Station and the "Robin Hood" Tavern, undoubtedly artificial and palæolithic; this ancient gravel is I think usually placed in the Glacial series; the find must be accepted as genuine. I may say here that on the 23rd of this month I found another implement and six flakes in gravel brought from Ware.

After my friends had looked over the collection here, listened to a few hints, and received a gift each of an implement from my own store in pleasant remembrance of the visit, we went to see some of the small excavations still open near Stoke Newington Common, in one of which the line of the "Palæolithic Floor" was distinctly visible, covered with about two feet of "trail and warp" and surmounted by humus. We then went into the Lea Valley, the meaning of the wide and deep excavation since palæolithic times being well understood by my visitors

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WORTHINGTON G. SMITH

A Remarkable Form of Cloud

THE peculiar cloud formation observed by Mr. Hopkins and communicated to NATURE, vol. xxviii. p. 299, was also seen by me on Sunday, July 22, at 10.35 p.m. What I saw accords almost perfectly with the description given by Mr. Hopkins; but there was one rather important exception. Starting from a little above the horizon in the north-west I observed the position of another arch of cloud, clearly defined, strictly parallel to the principal arch, and ending somewhat abruptly about 20° from the zenith. The main streak was separated from it by about three times its width, and the intermediate space was quite clear. Both clouds appeared comparatively dense, and were situated at a moderate elevation. I did not notice any change in their appearance, nor did I see them break up.

It seems not improbable that currents of air from the north-west, passing through an otherwise tranquil but vapour-laden atmosphere of a much lower temperature than the surrounding air, may have originated these streaky bands of cloud by condensing the aqueous vapour suspended along their course into definite form.

ARTHUR EBBELS

Clapham, July 31

WITH reference to Mr. Hopkins's letter in NATURE last week (p. 299), I may say that I observed the bow-like band of